REMARKS:

Claims 1-4, 7-11, 14-18, and 21-23 are currently pending in the application.

Claims 5, 6, 12, 13, 19, and 20 have been previously canceled, without *prejudice*.

Claims 1-4, 7-11, 14-18, and 21-23 stand rejected under 35 U.S.C. § 103(a) over Multi-Objective Optimization using Evolutionary Algorithms by Kalyanmoy Deb ("*Deb*").

REJECTION UNDER 35 U.S.C. § 103(a):

Claims 1-4, 7-11, 14-18, and 21-23 stand rejected under 35 U.S.C. § 103(a) over *Deb*.

The Applicants respectfully submit that *Deb* or the Examiner's Official Notice either individually or in combination, fail to disclose, teach, or suggest each and every element of Claims 1-4, 7-11, 14-18, and 21-23. Thus, the Applicants respectfully traverse the Examiner's obvious rejection of Claims 1-4, 7-11, 14-18, and 21-23 under 35 U.S.C. § 103(a) over the proposed combination of *Deb* or the Examiner's Official Notice, either individually or in combination.

The Proposed *Deb-Official-Notice* Combination Fails to Disclose, Teach, or Suggest Various Limitations Recited in Applicants Claims

For example, with respect to independent Claim 1, this claim recites:

> A method for generating an optimized supplier allocation plan, comprising:
> identifying a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts;
> identifying a plurality of suppliers, each supplier operable to supply at least one part associated with the allocation problem;
> selecting one or more objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier;
> receiving at least one constraint constraining at least one part variable;

optimizing the one or more objective functions with respect to the at least one constraint to yield a value for each part variable by:

optimizing a first objective function to determine a first normalization factor;

optimizing a second objective function to determine a second normalization factor,

generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

optimizing the combined objective function; and

determining a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan. (Emphasis Added).

Independent Claims 8, 15, 22, and 23 recite similar limitations. *Deb* or the Examiner's Official Notice either individually or in combination, fails to disclose each and every limitation of independent Claims 1, 8, 15, 22, and 23.

The Applicants respectfully submit that *Deb* fails to disclose, teach, or suggest independent Claim 1 limitations regarding "*optimizing a first objective function to determine a first normalization factor*" or "*optimizing a second objective function to determine a second normalization factor*". The Office Action merely alleges that the above emphasized limitations are taught by *Deb* in the section entitled "Weighted Sum Method", beginning on page 50. However this portion of *Deb* fails to disclose, teach, or suggest "*optimizing a first objective function to determine a first normalization factor*" or "*optimizing a second objective function to determine a second normalization factor*", as recited in independent Claim 1.

In particular, the Office Action states that scalarizing a set of objectives into a single combined objective by pre-multiplying each objective with a weight and that the system might attempt to make objectives equally important first to normalize the objectives. The Office Action further states that represents the above emphasized limitations including "generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization

factor and weighted by a second weighting factor". (12 October 2006 Final Office Action, Page 3). The Applicants respectfully disagree.

In section 3.1 of *Deb*, the "Weighted Sum Method" section, *Deb* states that the "weighted sum method, as the name suggests, scalarizes a set of objectives into a single objective by pre-multiplying each objective with *a user-supplied weight*". (*see Deb*, Page 50). (Emphasis Added). In addition, *Deb* further states that multiplying each objective by a different weight renders them equally important, or normalizes them. However, *Deb* fails to teach, suggest, or even hint at how to determine the weight factors. As stated in *Deb*, these weights depend on various factors.

Deb further states on page 50 that the "weighted sum approach requires a precise value of the weight for each objective". However, *Deb* fails to teach, suggest, or even hint at how to determine these weights. In addition, *Deb* proceeds from the point of assuming that the weight factors are known: "knowing the weights we can calculate the composite function F". (*see Deb* Page 51). *Deb* further states that by choosing a weight the corresponding optimal solution can be found. In essence, *Deb* merely provides for *the user supplying a known weight factor*. In contrast, independent Claim 1 provides for "*optimizing a first objective function to determine a first normalization factor*" and "*optimizing a second objective function to determine a second normalization factor*". In addition, *Deb* merely provides *using a known weight to normalize a set of objectives and then determining an optimal solution to the combined objective*. In contrast, independent Claim 1 provides for *optimizing each individual objective in order to determine the weight factor for that objective*. Thus, the Applicants respectfully submit that the equations forming the foundation of the Examiner's comparison between *Deb* and independent Claim 1 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 1 from *Deb*.

The Applicants further respectfully submit that *Deb* fails to disclose, teach, or suggest independent Claim 1 limitations regarding "*determining a quantity of each part to be procured from at least one supplier according to the values to generate*

the optimized supplier allocation plan". In particular, the Examiner equates determining solution according to the values to generate an optimized plan recited in independent Claim 1 with generating a solution to the objective function disclosed in *Deb*. However, even if *Deb* could be construed as teaching generating an optimized supplier allocation plan, which it does not, it clearly does not; it does not necessarily follow that the solution produced would include "*a quantity of each part to be procured from at least one supplier*". Even assuming *arguendo* that *Deb* does teach generating an optimized solution, which it does not, it clearly does not; *Deb* fails to teach, suggest, or even hint at producing the solution in the same manner as recited in independent Claim 1. The only way to determine that *Deb* even hints at "*determining a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan*", as recited in the independent Claim 1 is through an improper use of hindsight, using the subject Application as a template to formulate reconstructive hindsight, which constitutes impermissible use of hindsight under 35 U.S.C. § 103(a). Thus, the Applicants respectfully submit that the equations forming the foundation of the Examiner's comparison between *Deb* and independent Claim 1 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 1 from *Deb*.

The Applicants still further respectfully submit that *Deb* fails to disclose, teach, or suggest independent Claim 1 limitations regarding "*identifying a plurality of parts associated with an allocation problem*, the allocation problem *having a demand requirement* associated with the plurality of parts" and "*identifying a plurality of suppliers*, each supplier operable to supply at least one part associated with the allocation problem". In particular, the Examiner states that the term "*optimization*" disclosed in *Deb* allegedly represents "*identifying an allocation problem*". (12 October 2006 Final Office Action, Page 2). (Emphasis Added). Additionally, on page 4 of the Office Action, the Office Action concedes that *Deb fails to specifically teach a parts allocation problem*. The Office Action further states that "utilizing the optimization teachings of *Deb* for a parts allocation problem, as in the Applicant's

claimed invention, is an aesthetic design choice (*see* MPEP 2144.04(I))". (12 October 2006 Final Office Action, Page 4). The Applicants respectfully disagree.

MPEP 2144.04 states that if facts in a prior legal decision are sufficiently similar to those in an application under examination, the Examiner may use the rationale used by the court. The Applicants respectfully submit that the facts of the cases presented under MPEP 2144.04 are non-analogous to the subject Application and therefore the application of this rejection is incorrect. The Applicants further respectfully submit that the facts presented in the cases under MPEP 2144.04 (I) do not support the Examiner's position and in fact support the Applicants' position. MPEP 2144.04 (I) states:

> *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947) (Claim was directed to an advertising display device comprising a bottle and a hollow member in the shape of a human figure from the waist up which was adapted to fit over and cover the neck of the bottle, wherein the hollow member and the bottle together give the impression of a human body. Appellant argued that certain limitations in the upper part of the body, including the arrangement of the arms, were not taught by the prior art. The court found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art.). But see *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999) (The claims of a utility application, drawn to a generally round, orange plastic trash bag with a jack-o-lantern face, were rejected under 35 U.S.C. 103. However, the court reversed the rejection for lack of motivation to combine conventional trash bags with a reference showing a jack-o-lantern face on an orange paper bag stuffed with newspapers.); *Ex parte Hilton*, 148 USPQ 356 (Bd. App. 1965) (Claims were directed to fried potato chips with a specified moisture and fat content, whereas the prior art was directed to french fries having a higher moisture content. While recognizing that in some cases the particular shape of a product is of no patentable significance, the Board held in this case the shape (chips) is important because it results in a product which is distinct from the reference product (french fries).

In *Ex parte Hilton* "the Board held that the shape (chips) is important because it results in a product which is distinct from the reference product (french fries)." The Applicants respectfully submit that ***the choice of a specific type of optimization problem, a parts allocation problem is important because it results in something***

that is distinct from Deb. The Applicants further respectfully submit that *Deb* supports the Applicants position. Specifically, in section 3.1.3 of *Deb*, *Deb* points out a number of disadvantages and situations that the method in *Deb* fails to address. As mentioned above, *Deb* fails to teach, suggest, or even hint at how to determine weight factor. In contrast, independent Claim 1 provides for generating a supplier allocation plan and has determined the manner of how to automatically determine a weighting factor based on various constraints presented. This is distinct from *Deb* and illustrates how the parts allocation problem is distinct from a general, theoretical, optimization problem.

Thus, for at least the reasons set forth above, the Applicants respectfully submit that the Office Action has failed to properly establish a *prima facie* case of obviousness based on the proposed combination of *Deb* or the Examiner's Official Notice, either individually or in combination, as the proposed combination of *Deb* or the Examiner's Official Notice, either individually or in combination fails, to teach each and every feature as recited in independent Claim 1. The Office Action has not shown the required teaching, suggestion, or motivation in these references or in knowledge generally available to those of ordinary skill in the art at the time of the invention to combine these references as proposed.

The Applicants Claims are Patentable over the Proposed *Deb-Official-Notice* Combination

The Applicants respectfully submit that independent Claim 1 is considered patentably distinguishable over the proposed combination of *Deb* and the Examiner's Official Notice, either individually or in combination. With respect to independent Claims 8, 15, 22, and 23 each of these claims include limitations similar to those of independent Claim 1. Thus, independent Claims 1, 8, 15, 22, and 23 are considered patentably distinguishable over *Deb* and the Examiner's Official Notice, either individually or in combination.

With respect to dependent Claims 1-4, 7, 9-11, 14, 16-18, and 21: claims 1-4, and 7 depend from independent Claim 1; Claims 9-11, and 14 depend from independent Claim 8; and Claims 16-18, and 21 depend from independent Claim 15. As mentioned above,

each of independent Claims 1, 8, 15, 22, and 23 are considered patentably distinguishable over *Deb* and the Examiner's Official Notice. Thus, dependent Claims 1-4, 7, 9-11, 14, 16-18, and 21 are considered to be in condition for allowance for at least the reason of depending from an allowable claim.

For at least the reasons set forth herein, the Applicants respectfully submit that Claims 1-4, 7-11, 14-18, and 21-23 are not rendered obvious by the proposed combination of *Deb* or the Examiner's Official Notice. The Applicants further submit that Claims 1-4, 7-11, 14-18, and 21-23 are in condition for allowance. Thus, the Applicants respectfully request that the rejection of Claims 1-4, 7-11, 14-18, and 21-23 under 35 U.S.C. § 103(a) be reconsidered and that Claims 1-4, 7-11, 14-18, and 21-23 be allowed.

THE LEGAL STANDARD FOR OBVIOUSNESS REJECTIONS UNDER 35 U.S.C. § 103:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, ***there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings***. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) ***must teach or suggest all the claim limitations***. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and ***not based on applicant's disclosure***. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. (Emphasis Added). Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, ***there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination***. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). (Emphasis Added). In fact, the absence of a suggestion to combine is dispositive in an

obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991; *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

A recent Federal Circuit case makes it clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

CONCLUSION:

In view of the foregoing remarks, this application is considered to be in condition for allowance, and early reconsideration and a Notice of Allowance are earnestly solicited.

Although the Applicants believe no fees are deemed to be necessary; the undersigned hereby authorizes the Commissioner to charge any additional fees which may be required, or credit any overpayments, to **Deposit Account No. 500777**.

Please link this application to Customer No. 53184 so that its status may be checked via the PAIR System.

Respectfully submitted,

12/12/06
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